

Association for Information Systems AIS Electronic Library (AISeL)

UK Academy for Information Systems Conference
Proceedings 2009

UK Academy for Information Systems

3-31-2009

E-commerce Technology Acceptance (ECTA) Framework for SMEs in the Middle East countries with reference to Jordan

Ahed Al Haraizah

Kingston University London, UK, k0418628@kingston.ac.uk

Islam Choudhury

Kingston University London, UK, i.choudhury@kingston.ac.uk

Follow this and additional works at: <http://aisel.aisnet.org/ukais2009>

Recommended Citation

Al Haraizah, Ahed and Choudhury, Islam, "E-commerce Technology Acceptance (ECTA) Framework for SMEs in the Middle East countries with reference to Jordan" (2009). *UK Academy for Information Systems Conference Proceedings 2009*. 4.
<http://aisel.aisnet.org/ukais2009/4>

This material is brought to you by the UK Academy for Information Systems at AIS Electronic Library (AISeL). It has been accepted for inclusion in UK Academy for Information Systems Conference Proceedings 2009 by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

E-COMMERCE TECHNOLOGY ACCEPTANCE (ECTA) FRAMEWORK FOR SMEs IN THE MIDDLE EAST COUNTRIES WITH REFERENCE TO JORDAN

Ahed Al Haraizah

Kingston University London, UK

Email: k0418628@kingston.ac.uk

Islam Choudhury

Kingston University London, UK

Email: i.choudhury@kingston.ac.uk

Abstract

This paper uses a theoretical foundation of continuum models starting with Innovation and Diffusion Theory, Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), and ending by Technology Acceptance Model (TAM) as its theoretical basis. The paper proposes a new theoretical model that emphasises on small to medium enterprises' accepting electronic commerce technology in the Middle East countries by identifying the individual factors, implying perceived usefulness, perceived ease of use, attitude, and behaviour as the factors affecting SMEs decision to the adoption. Hence, the paper investigates the impact of external social factors that affecting individuals' adoption those presented by trust, culture, and sociology of technology. This paper presents the correlation between these external and internal factors and the links between them. These factors determine the attitude of individuals toward the actual use and acceptance of e- commerce technology within SMEs in Jordan as an example for the Middle East countries.

Keywords: E-commerce, SMEs, Technology Acceptance Model (TAM).

1. Introduction

Technology has transformed many aspects of business and market activities. Internet is one of the most important technologies, which have created a global digital economy with new opportunities. One of the most noticeable changes of business is e-commerce. E-commerce enables business to sell products and services to consumers on global basis. The possibility for conducting business to business commerce in the internet will expand greatly and may become a routine part of commerce. It is no exaggeration to assert that e-commerce has an enormous impact on societies currently. According to the United Nation Report (2003) e-commerce globally revenue on some societies was approximately \$3.8 trillion. About 80% of e-commerce transactions are taking place in the USA, 15% in the Western Europe, and 5% in Asia, which is mostly in Japan.

For the developing countries, this digital revolution offers momentous opportunities for economic growth and development. For example, e-commerce has impacted positively on small and medium-sized enterprise (SMEs), bolstering their capability to compete, locate their position, and popularize their products in the global market place. The significance of small and medium sized enterprises (SMEs) in economic development has been taken into considerations of many scholars and practitioners. SMEs play an important role in economy development in addition it can be recognized to be as the engine of employment growth in the economy.

Latest technological innovations such as Information and Communication Technology (ICT) and Internet Technology (IT) have become more and more diffused amongst SMEs because barriers to the adoption have been considerably lowered by subordinated cost, open standard, and more ubiquitous internet-based technologies (Scupola, 2002). Most recently, SMEs' concerns with respect to acceptance of Electronic Commerce (EC) have been attracting a huge number of researchers. E-commerce is possibly becoming essential for SMEs as a way of gaining a multiplicity of competitive advantages and accessing universal markets. There are good theoretical reasons for presuming that the application of Electronic Commerce Technology Acceptance (ECTA) framework will allow for more effective and efficient adoption of e-commerce within SMEs in the Middle East. These will be outlined below.

2. Theoretical foundation of research model

There are many paradigms that pursue this adopter-centric approach such as *Diffusion of Innovations Theory (DoI)*, *Theory of Reasoned Action (TRA)*, *Theory of Planned Behaviour (TPB)*, and *Technology Acceptance Model (TAM)*. Diffusion of Innovation theory (Rogers, 1995) recognizes the following five characteristics of an innovation that augment its chances of broad acceptance within the population: its relative advantage, compatibility, complexity, trialability, and observability. Based on this theory, **relative advantage** is the degree to which an innovation is perceived as better, while **compatibility** refers to the degree to which the innovation is consistent with existing values and customs. **Complexity** measures the degree to which innovation is considered to be difficult. The last two components, **trialability** and **observability**, measure the degree to which the innovation can be experienced and observed.

2.1. Theory of Reasoned Action (TRA)

Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) focuses on two dependent factors for determining behavioural intention- the attitude towards behaviour and the attitude towards subjective norm. These determinants correspond to behavioural and normative beliefs where the former refers to the extent of the adopter's favourable or otherwise reaction (evaluation, appraisal, etc.) toward a given behaviour while normative beliefs considers the likelihood that referent persons approve or disapprove of performing a given behaviour. TRA with its robust nature lends itself well to generalization and has been applied to numerous areas consisting of the modelling of technology acceptance (Scannell, 1999). Moreover, it has been utilized to develop a common frame of reference for comparison of independent research studies technology on social systems, these models (Davis, 1986, 1989, Davis et al, 1989). Much Less specific than TRA, this model incorporates components from Information System literature , and assumes two key determinants for describing technology adoption behaviour- the technology perceived usefulness and its perceived ease of use. Subjective norms are not taken as important factors in this model. The figure (1) illustrates the TRA model.

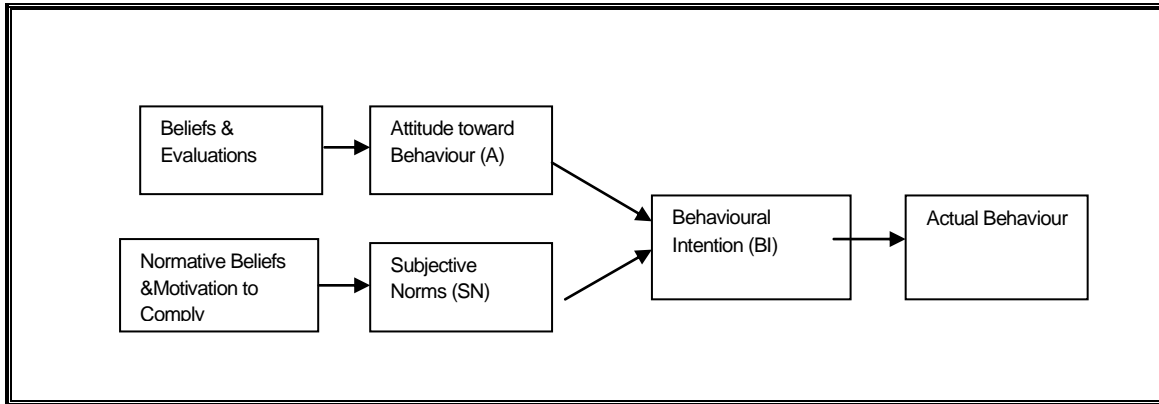


Figure1. Theory of Reasoned Action (Fishbein & Ajzen, 1975)

Arrows in the TRA (figure 1) indicate the direction of the influence. Conventionally, the theory of reasoned action can be presented as follows (Fishbein & Ajzen, 1975, p.301):

$$B \sim BI = (AB) W1 + (SN) W2$$

Where **B**= a specific behaviour, **I**= consumer's intention to perform behaviour **B**, **AB**= consumer's attitude toward performing behaviour **B**, **SN**= subjective norm with respect to whether other people want the consumer to engage in that behaviour. **W1** and **W2**= empirically determined weights that represent the relative influence of **AB** and **SN**, and the components of **BI**. Significantly, TRA proposes that an individual's behaviour is a function of both the individual's attitude toward a specific behaviour and the social influences and norms surrounding the behaviour.

2.3. Theory of Planned Behaviour

The theory of Planned Behaviour (TPB) was originally built on the Theory of Reasoned Action (TRA). Ajzen (1985, 1991) extends TRA by adding a new component that is perceived behavioural control to the original TRA form as an additional determinant of intention and behaviour. TPB hypothesizes that behaviour is a direct function of behavioural intention which is determined by three components: Attitude, Subjective Norm, and perceived behavioural control. Attitude and Subjective Norm are consistent with the original TRA model, while perceived behavioural control, which distinguishes this model from TRA that represents the perceived ease or difficulty of performing the behaviour and relies on past experience and future obstructions. The figure (2) illustrates the framework of TPB.

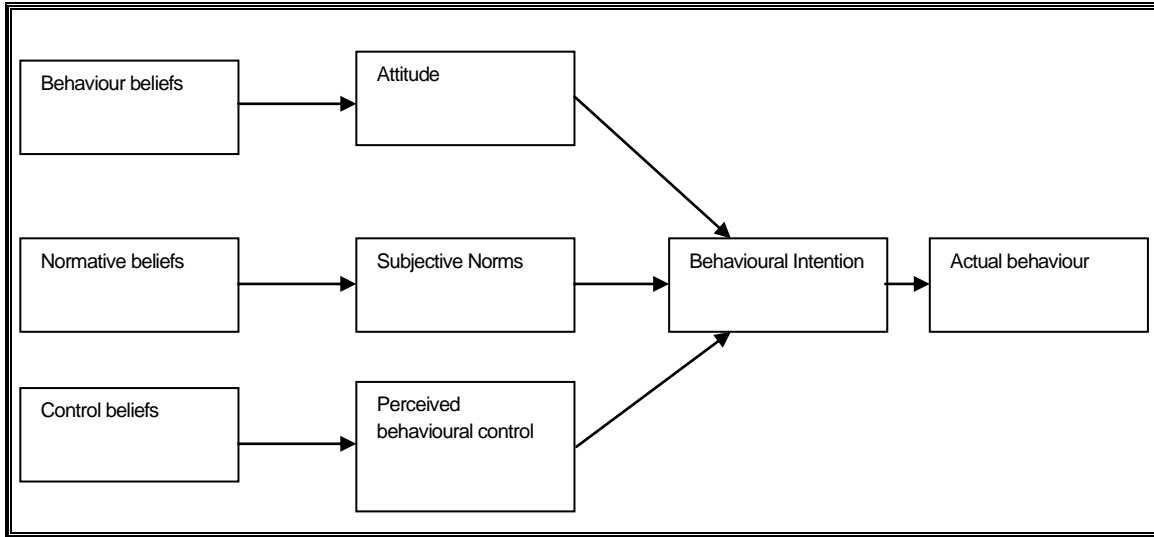


Figure 2. Theory of Planned Behaviour (TPB)

2.4. Technology Acceptance Model

The Technology Acceptance Model (TAM) was suggested by Davis (1989) and Davis et al (1989) as an instrument to predict the likelihood of new technology being adopted within a group or an organization. Fundamentally, it was originated from the theory of reasoned action (TRA) (Ajzen and Fishbein, 1975) in addition proposes that technology acceptance and use can be explained in context of individual's internal beliefs, attitudes and intentions. The original TAM measured the impact of four internal variables upon the actual use of the technology. Therefore, the internal variables in the original TAM are: perceived ease of use (PEU), perceived usefulness (PU), attitude toward use (A), and behavioural intention to use (BI). Figure 3 demonstrates the original TAM model.

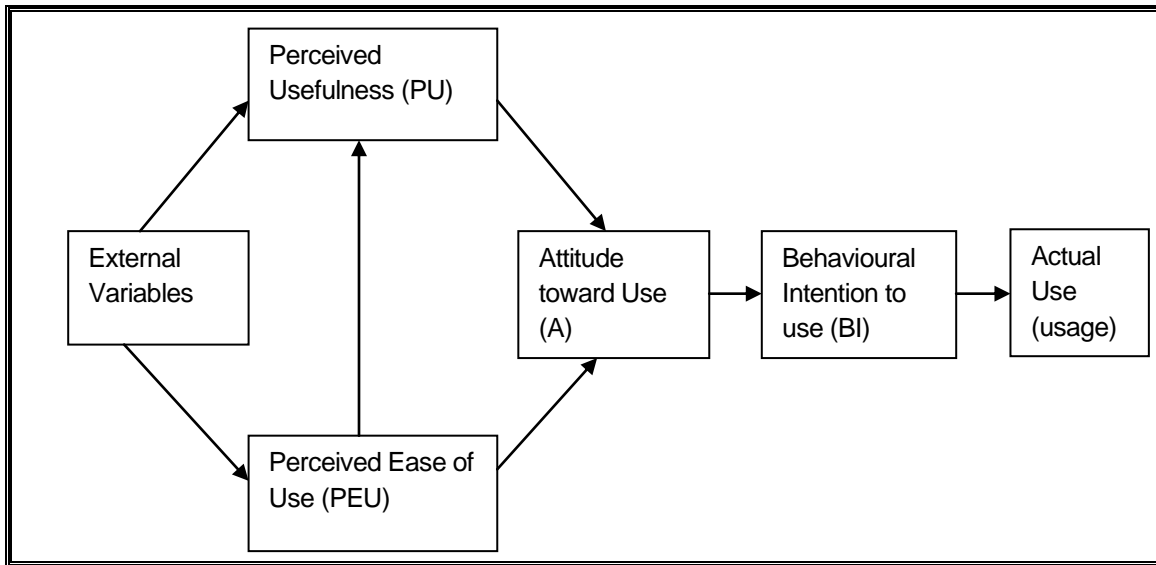


Figure 3. the original TAM model

3. Schematic model of a comprehensive research framework for Middle East countries

E-commerce acceptance and adoption has been widely investigated in developed countries, which is created in, and for, those countries. Davis (1989) Technology Acceptance Model (TAM) has been the base of vast of the research into technology diffusion. Moreover, the most of examined studies were conducted in the USA and other developed countries, because of this exclusive of the use of TAM. It seems that there is a sort of significance to undertake a research into the adoption of new technology, for instance E-commerce technology, in the circumstances of lagging behind countries, such as those in the Middle East. A schematic model is drawn to clarify the linkage between external and internal components of e-commerce technology acceptance model (ECTA), the external factors presented by trust, culture, and sociology of technology. While the internal elements(TAM) presented by perceived usefulness of EC, perceived ease of use of EC, attitude toward using EC, behavioural intention to use EC, and actual use of EC technology. All mentioned factors either external/internal are affecting individuals' attitude toward performing a specific behaviour (adopting e-commerce technology).

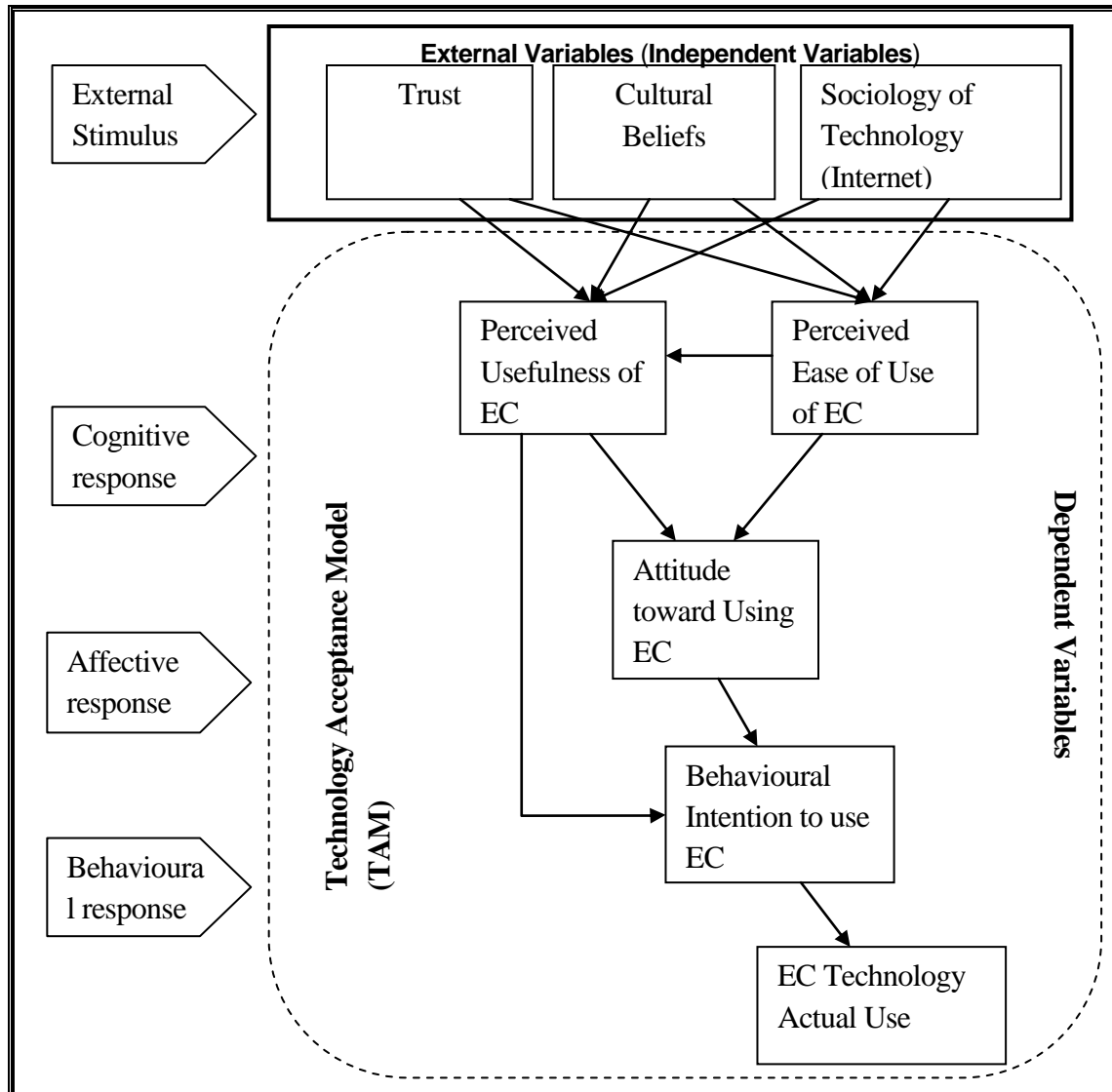


Figure 4. The extended Technology Acceptance Model

The adopted model forms the basis of this research and constructs based on a huge body of relevant research (Fishbein & Ajzen, 1975; Davis, 1986; Davis et al, 1989; Venkatesh et al, 2003; Burton-Jones & Hubona, 2005).

Attitude refers to an individual's overall feeling of favourableness or unfavourableness toward some stimulus object (Fishbein & Ajzen, 1975, p. 216), which is specifically based on individuals' evaluation regarding a particular object. In e-commerce acceptance view, individuals generally have attitudes toward e-commerce application in their business processes, these attitudes might be positive or negative (accept/ reject).

4. Research Methodology

The foremost requirement of this research is data collection. The two main types of responses during surveys, verbal (oral and written) or non-verbal, can have combinations to inspire four major forms of data collection methods i.e. observational methods; survey research; secondary data analysis; qualitative research (Punch, 2005). In the current study, exploratory and explanatory research design will be applied. The objective of exploratory is theory initiation and theory developing while explanatory research emphasizes theory testing. However, research can be classified on a continuum between exploratory and explanatory research. The research purposes and questions of this study can be described as both exploratory and explanatory but largely explanatory, since the research aims to find out factors determine the likelihood of adoption of e-commerce technology by SMEs in Jordan. Thus, the research begins with an extensive review of the literature with respect to electronic commerce as a phenomenon, and SMEs to understand better the present problem and to narrow down the research topic. The scope of the study is then refined, guiding to specific research question. Next, a number of hypotheses are developed based on prior relevant studies and existing technology adoption models. This research has produced 11 main hypotheses and the first 6 hypotheses representing the (independent) external factors to Technology Acceptance Model (TAM). These factors are Culture, Trust, and Sociology of Technology. The dependent variables are all inner components of TAM: Perceived Usefulness, Perceived Ease of Use, and Attitude toward using and behavioural intention to use e-commerce technology by individuals within SMEs (see table 1). In the explanatory phase, an extended Technology Acceptance Model (TAM) will be tested by using quantitative and qualitative methods.

Dependent Variables	Independent Variables
TAM	Trust
<ul style="list-style-type: none"> • perceived usefulness of e-commerce technology • perceived ease of use of e-commerce technology • attitude to use e-commerce technology • behavroiual intention to use e-commerce technology • actual use of e-commerce technology 	<ul style="list-style-type: none"> • trust in e-commerce technology • trust in business relationship
	Culture
	<ul style="list-style-type: none"> • individualism/collectivism • power distance • uncertainty avoidance • masculinity/ femininity • long vs. short term orientation
	Sociology of Technology
	<ul style="list-style-type: none"> • online social interaction • online commercial interaction

Table 1. Independent and dependent variables.

5. Conclusion

This paper focuses on E-commerce acceptance framework for SMEs in the Middle East countries, with reference to Jordan. The TAM model (Davis, 1986) has been extended to include various external social factors (e.g., Trust, Culture, and Sociology of Technology) that are required to present more comprehensive set of factors that determine the overall attitude of individuals to accept and use e-commerce technology. Triangulation approach has been embraced in order to conduct this study that can offer multiple measurements and techniques, which could cover multiple angles of this study.

6. References

Ajzen, I. (1991), "The theory of planned behavior", *Organizational behavior and human decision processes*, vol. 50, no. 2, pp. 179-211.

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl and J. Beckmann (eds.), *Action Control: From Cognition to Behavior*. New York: Springer-Verlag, pp. 11–39.
- Burton-Jones, A. & Hubona, G.S. (2005), "Individual differences and usage behavior: revisiting a technology acceptance model assumption", *ACM SIGMIS Database*, vol. 36, no. 2, pp. 58-77.
- Davis, F.D. 1986, "A technology acceptance model for empirically testing new end-user information systems: theory and results," in MIT Sloan School of Management. Cambridge, MA: Mit Sloan School of Management.
- Davis, F.D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, vol. 13, no. 3, pp. 319-340.
- Davis, F.D., Bagozzi, R.P. & Warshaw, P.R. (1989), "User acceptance of computer technology: a comparison of two theoretical models", *Management Science*, vol. 35, no. 8, pp. 982-1003.
- Fishbein, M. & Ajzen, I. (1975), *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*, Addison-Wesley Pub. Co.
- Punch, K (2005) Introduction to Social Research: *Quantitative and Qualitative Approaches*. 2nd ed. Sage Publications. London.
- Rogers, E.M. (1995) *Diffusion of Innovations*, (4th Ed), the Free Press, New York.
- Scannell, T.V. (1999) *Behavioural Models of Advanced Manufacturing Technology Selection*, Thesis, Michigan State University, East Lansing, MI.
- Scupola, A. (2002), *Adoption Issues of Business-to-Business Internet Commerce in European SMEs*, Paper presented to the 35th Hawaii International Conference on System Science, Hilton Waikoloa Village: Big Island , Hawaii, 5-8 Jan.
- United Nations Conference on Trade and Development (2003). *E- Commerce and Development Report, 2003, Part One*. New York and Geneva: United Nations
- Venkatesh, V. Morris, M.G., Davis, G.B., and Davis, F.D. (2003). "User acceptance of information technology: Toward a unified view." *MIS Quarterly*, Vol.27 No.3, PP. 425-478.